

REMARKS

Specification

Material incorporated by reference from US 10/367,539 has been expressly placed into the application. See page 4, lines 19-27, especially lines 23-27, and page 7, lines 12-26, especially lines 22-26. For example, page 7, line 21, expressly discloses that the details of ion-beam-assisted deposition of metals is described in more detail in co-pending patent application serial number 10/367,539.

The material being inserted is the material previously incorporated by reference and that the amendment contains no new matter.

A copy of said application is attached for the convenience of the Examiner.

Claim Amendments

Claim 1 is amended to specify the resistivity of the electrically conductive coating disposed on the rear side of the substrate. See original claim 3, for example. Claim 1 is further amended to specify that the electrically conductive coating is applied by ion beam assisted deposition. See, e.g., on page 7, lines 12-13, of the description.

Claim 3 recites that the electrically conductive coating is applied by ion-beam-assisted-sputtering. See, e.g., page 7, line 14, of the description.

Corresponding amendments were made in the method claims.

New claims 20-27 and 31-32 in addition to support in the originally filed specification find support in applicant's co-pending U.S. patent application serial number 10/367,539, which was explicitly incorporated by reference into the current application's specification for its teaching of, e.g., the coating of the rear side of the substrate, ion-beam-assisted deposition, and ion-beam-sputtering, etc. See page 4, lines 19-27, and page 7, lines 12-26. These new claims find support in the material now added by amendment to the specification.

Claim Rejections Under 35 USC § 102

The anticipation rejections are overcome by amendments. Features of claim 3, which claim was not rejected as allegedly anticipated, have been incorporated into independent claims 1 and 11, and are also present in new independent claim 31. All the remaining claims are dependent on these three independent claims. Accordingly, no claim is anticipated.

Claim Rejections Under 35 USC § 103

All the claims are allegedly obvious over Tong et al., U.S. patent no. 6,352,803, or Levinson et al., U.S. patent no. 6,984,475, in view of Alpay et al., U.S. patent no. 6,841,309.

Tong teaches a product that has a dielectric coating on the backside of a substrate and Levinson teaches a product that has a conductive layer on the backside of a substrate. The purpose of these coatings or layers is to facilitate electrostatic clamping of the substrate/product to an electrostatic chuck. These references do not teach how such coating or layer is produced or achieved. Indeed, not much detail or attention is given to the nature and/or characteristics of these coatings or layers, which is a clear indication that properties such as electrical resistivity, etc., for example, are not of importance at all to the inventions taught in these references.

Alpay teaches coating the front side of a substrate with a protective coating. Applying such a coating to the backside of a substrate is not taught or suggested at all. The purpose of the protective coating is to achieve a damage resistant photo mask, e.g., preventing it from reacting with other substances, such as cleaning solutions. The protective coating can also prevent electrostatic energy from forming on or arching between features on the photo mask pattern and damaging the features. See, for example, the abstract of Alpay. Nothing in Alpay teaches or suggests that such a protective coating should be applied to the rear side of the substrate.

Given that the placement of the coatings and the purpose thereof in the references are all different, one of ordinary skill in the art would not have found it obvious to combine the teachings of these references in such a way so as to achieve the claimed invention.

Even when one ignores the lack of teachings of Alpay to apply the coating to the backside, the method of applying the coating is described to be by a spin coater (see column 6, lines 9-10), with various other methods of coating being mentioned on column 6, lines 18-20, among which are, magnetron sputtering, thermal or electron beam evaporation, chemical vapor deposition and ion beam sputtering. No direction or teaching is provided to one of ordinary skill in the art on how to select among the various disclosed coating processes. Thus, for this additional reason also, the claimed invention is not obvious.

Moreover, nothing in Alpay teaches or suggests what type of coating characteristics would be achieved with each mentioned method. Instead, all the coating methods mentioned are lumped together, indicating to one of ordinary skill in the art that the coatings achieved by the various disclosed methods should be expected to be equivalent in the sense that they lead

to equivalent products in characteristics, e.g., would be equivalently suitable to protect the photo masks' front from damage.

Although not necessary, applicants provide a declaration comparing a product obtained by the only other sputtering technique mentioned in Alpay, i.e., magnetron sputtering, to a claimed product which is prepared by ion beam assisted sputtering. The data in the attached declaration demonstrate that products prepared by ion-beam assisted sputtering, exhibit various unexpected and significant advantageous characteristics in particular with regard to resistance to abrasion and with regard to the durability thereof when compared to products obtained by magnetron sputtering. Thus, the abrasion of the products/substrate of the claimed invention during electrostatic chucking can be reliably prevented, which leads to the reliable prevention of contamination of the substrate and to the prevention of mask errors.

For all the foregoing reasons, reconsideration is respectfully requested.

The Commissioner is hereby authorized to charge any fees associated with this response or credit any overpayment to Deposit Account No. 13-3402.

Respectfully submitted,



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Experience

since Feb 07	Business Segment Leader Schott Lithotec, Jena	Responsible for the Business Segment Microlithography
Oct 02 – Jan 07	CTO Schott Lithotec AG, Jena	CTO Schott Lithotec AG Responsible for the USA (NY) and the German site which develop and produce Mask Blanks
Oct 00 – Sept 02	General Manager of Schott Geräte GmbH, Mainz	General Manager of Schott Geräte GmbH Responsible for development production and sales of analytical instruments.
Dec 98 – Sept 00	VP production optimization Schott Glas, Mainz	Responsible for Inhouse-Consultancy of Schott, dealing with production optimization
Aug 97 – Nov 98	Project manager production optimization Schott Glas, Mainz	Responsible for internal projects dealing with production optimization

Education

Jan 93 – July 97	PHD at the Institute for Machine Tools and Industrial Management (iwb), Munich (Prof. Milberg and Prof Reinhart)
Oct 87– Oct 92	Mechanical Engineering at the Technical University Munich